

supported by U. N. C. Sea Grant) at stations 1, 5 and 6.

3. Vertical profiles (surface, 0.5m, 1.0m, 2.0m, 3.0m, 3.5m) at station 6, and surface samples at stations 1 and 5, of chlorophyll a concentrations. Single samples taken at each depth.

#### C. Nutrient-limitation bioassays

1. Utilizing an in situ Cubitainer bioassay system in a concrete pond situated at the U.N.C. Institute of Marine Sciences, freshly collected water was routinely assayed to determine which, if any, nutrients were limiting algal primary production (Paerl and Bowles 1987) (Cubitainers are flexible containers, 95% transparent to PAR). Triplicate samples were amended with trace amounts of  $\text{Na}^{14}\text{CO}_3$  and enriched with the following nutrients (expressed as final concentrations):

- a) No nutrients (control)
- b)  $\text{NO}_3^-$  (14.3  $\mu\text{M}$ )
- c)  $\text{NO}_3^-$  (28.6  $\mu\text{M}$ )
- d)  $\text{PO}_4^{3-}$  (3.2  $\mu\text{M}$ )
- e) Trace metals (2  $\mu\text{g/l}$  each of Fe, Mn, Cu, Zn, Co, Mo)
- f)  $\text{NO}_3^-$  (14.3  $\mu\text{M}$ ) +  $\text{PO}_4^{3-}$  (3.2  $\mu\text{M}$ )
- g)  $\text{NO}_3^-$  (14.3  $\mu\text{M}$ ) +  $\text{PO}_4^{3-}$  (3.2  $\mu\text{M}$ ) + trace metals (as above).
- h) A silica amendment (1.5  $\mu\text{g/l}$ ) was substituted for the trace metals amendment (treatment "e" above) in bioassays from April 1989 through October 1989.